



Constellation: Apollo 203A

Installation Guide & User Manual

D.A.Wilson, Hideaway Studio, July 2013

HS-K4L-A008

Hideaway Studio Presents... Constellation: Apollo 203A



Constellation: Apollo was in many ways a celebration of yet another successful resurrection of an old classic saved from the grave... This time it was a 1976 Polymoog model 203A recently rescued from the US as a “non-worker” in an indeterminate state aka a bit of a gamble. Having safely arrived in the UK I set about attempting to return her to working order and after an initial inspection was relieved to discover that although she was indeed not working she was at least 100% complete.

After a very deep cleanse, a switched mode PSU retrofit (the original hot running linear PSU was all too typically badly burnt out!), some 45 CMOS multiplexor chips, 37 LEDs, several replacement tantalum caps, a complete keybed rebush and several dry joints located and fixed....

Sound, glorious sound!...

Moog's White Elephant?

The brainchild of Bob's engineer Dave Luce, development started in the early 1970s as one of a family three proposed instruments under project name Constellation. The Apollo was what became the Polymoog and went through several design iterations before its launch in 1975.

The Polymoog is essentially a rather unusual divide down formant synth featuring two complete divide down oscillator ranks driven from two separate PLL controlled master oscillators with a variable detune and transpose function and the ability to slave one from the other in sync mode. The reasoning behind this choice of architecture was an attempt to emulate the natural beating effects between each of two strings per note on the piano.

The resulting pulse and sawtooth waves are fed through dynamic control circuits for every individual key (in a similar fashion to the 1938 Novachord) and routed via a mixer in variable amounts to one of 8 preset formant filters, a variable three channel resonator and a paraphonic VCF. There is variable control over the pulse wave shape with fixed and LFO modulation.

Amazingly for a synth of the time the Polymoog is velocity sensitive and, although not a perfect implementation, adds so much more life and playability to the instrument. The resulting sound palette is rather unusual as is the front panel programming! There are 8 "presets" on model 203A but these are really considered to be starting points. By pressing the VAR button in each of the programming sections you can change the characteristics of the sound but only certain control parameters are enabled for each preset.

The Polymoog has seemingly gained a poor reputation over the years for being overly complex for what it offers at first glance and rather unreliable with it. This is perhaps a little unfair as there would have been few simpler ways to meet the specification without the aid of the modern digital control to be found in later offerings. Although the instrument is indeed not as reliable as one would like, it is rather too easy to forget just how much vintage technology lurks under that large black vacuum moulded hood! Furthermore the Polymoog was utilising some pretty modern technology of the time including CMOS multiplexors and even LEDs which were still in their infancy in the early 1970s and were prone to failure quite unlike those of modern times! Then there are the infamous custom Polycom chips that handle the envelopes and wave shaping for each key mounted on separate plug in modules – so the story goes Moog invested over half a million dollars in developing them.

The instrument is most definitely not a polyphonic model D and this must have upset some customers but I believe it was never meant to be such a beast – it's got a unique character of its own and is in many ways a refreshing change. It does indeed have its limitations but in some ways that's what makes it special. It all needs careful tweaking to get the best out of it – definitely not what I'd call an instant gratification machine but the rewards are there if you're prepared to learn what makes it sing....

So what does it do best?

Harpsichord!, piano, guitar, harp, solo strings, warm and weird pads, clavs and brass....

And no Vox Humana preset to be found.... Sadly that was only on the model 280...

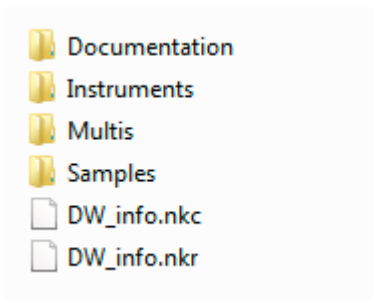
Equipment Used:

All sample material captured from a recently restored 1976 Polymoog 203A with very kind permission from Will Gregory. Other material captured from newly programmed patches from a Studio Electronics Omega 8 Discrete Polysynth. Signal chain included a 1960s Fender "Oil Can" tube electrostatic delay, TL Audio EQ-2011 Tube EQ & Boss CE-300 Analog Chorus Unit. Sample capture in 24 bits via an RME Fireface.

Installation

Installation is straightforward. Constellation Apollo requires Kontakt version 4.2.4 or higher and around 640Mb of free hard disk space. Once the .zip file has been downloaded unzip the archive making sure the original directory structure is retained.

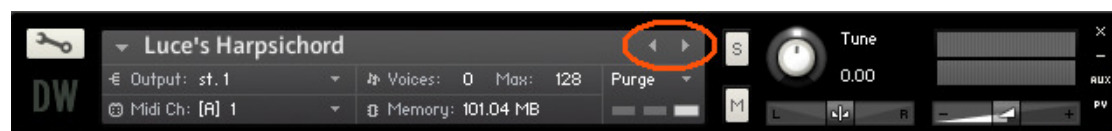
This should result in a folder called Constellation Apollo containing the following folders:



To run the library simply load up one of the 32 example .nki files in the Instruments folder. There are also 12 example layered instruments in the Multis folder.

Instant Gratification

You can easily run through each of the example instruments (.nki) in the instruments folder by clicking on the small arrows to the right of the instrument name.



The example multi instruments (.nkm) in the Multis folder can also be cycled through by clicking on the arrows to the right of the multi rack window.



Hopefully by loading up the examples you will be able to see how they have been constructed in the layering engine and can be used as starting points for new sounds which can be saved under new file names.

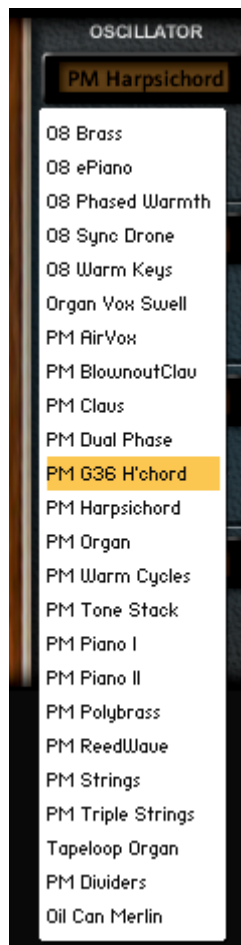
Using the Layering Engine



Naturally the example instruments packed with the library can be used as is but where the fun starts is having a go dialling in your own sounds using the intuitive layering engine. This permits up to four sounds to be blended together with a number of basic synthesis parameters at hand such as pitch and envelope control.

The layering engine consists of four identical programming panels and an effects section. This release is the first to use a recently updated version of the layering engine which has recently been revised to include separate velocity sensitivity controls for each layer.

Voice Selection



To the left of each of the four voice panels there is an orange LCD display showing the selected voice. By clicking on each of the displays a pull down menu appears allowing one of 24 voices/partials to be selected.

The selected sounds can be used in any combination including multiple instances of the same sound.

The Voice Programming Panels



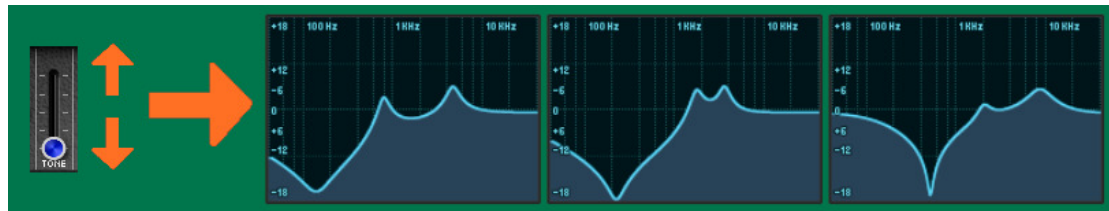
Each of the four voice programming panels features 12 basic controls to shape each sound in the layered instrument. Each control is altered by moving the mouse whilst clicking on it.

The **LEVEL** control sets the level of the voice in the layer

The **PAN** control sets the position of the voice in the stereo mix

The **SEMI** control sets a fixed pitch offset above or below the key played

The **FINE** control sets the fine pitch of the voice



The **TONE** control is a deceptively powerful feature. In the fully downward position the signal is unaffected. As the control is moved upwards a continuously evolving complex EQ curve is applied. With some experimentation this feature can be used for embellishing formants within each voice and helping to sit each of the layered voices together in the mix.

The blue button to the right of the control sliders is the **LAYER ON/OFF** which enables each of the four voices in the instrument. By clicking on the button the layer toggles on and off. It is often useful to use this feature whilst creating new sounds to determine how each voice is contributing to the overall sound.

The Envelope Controls (Loudness Contour)

The **ATTack**, **DECay**, **SUS**tain and **REL**ease control sliders offer basic envelope control for modulation of the amplitude over time (VCA). The further the attack control is moved upwards the more gradually the sound builds up. The more the release control is moved upwards the longer it takes for the sound to decay after the note is released. The decay slider determines how quickly a sustained sound diminishes with time whilst sustained. The higher the setting, the longer it takes to decay. Very rapid settings (sliders towards the bottom of their travel) will produce plucked or staccato effects and slow settings will produce a swelling effect. The sustain control determines the volume at which the sound will rest during sustain once the decay portion of the envelope has completed.

The **VELO** control determines how sensitive the amplitude modulation (VCA) is to changes in key velocity. In the lowest position key velocity has no effect on volume.

NB: Several of the programs in this library make use of **velocity controlled attack modulation**. The use of **velocity sensitive** keyboards will therefore really bring out this feature. This means that the attack parameter is lowered the harder the note is played. This is a means of improving the playability and expression of a sound especially in a live performance. It can be used to good effect by setting the attack slider a little further upward (slower) than first expected.

The LFO Controls

Each voice features it's own pitch LFO. This permits everything from a gentle vibrato to a dramatic plunging effect. Both the **RATE** and the **DEPTH** of the LFO can be altered. To disable the LFO simply set the depth control to the centre position. The depth control is bi-polar which is not something you can hear in isolation but can become a very powerful effect when LFOs of opposite polarity are used on adjacent voices. A typical gentle vibrato is created by setting the depth control just slightly to one side of the centre position with the rate control somewhere around half way.

Mixing it all up

Although the layering engine is seemingly basic, it is can be used to great effect. With experimentation a multitude of sounds can be created.

As well as the more obvious layers consisting of four different voices all tuned to the same pitch it is also possible to create other effects:

Making it Fat

Try selecting four instances of the same voice and then slightly detuning them using the **FINE** pitch controls and even setting different **LFO** parameters.

Expression

Setting a different **ATTACK** level for each voice can often help to make an instrument more responsive to changes in velocity and through sustain.

Please note that most voice/partial sounds in this library are designed to react in a number of ways to velocity (volume, VCA and VCF attack phase, filter cutoff and pitch). With this in mind it is highly recommended that a velocity sensitive keyboard is used and that many featured sounds often benefit from a very gentle and sustained playing style thus adding to the dynamic effect when more strident notes are subsequently played.

Making it Wide

Try setting the **PAN** controls for each voice to wildly different settings for each voice for a more spatial effect.

Intervals

Some interesting and sometimes quite beautiful effects can be created by setting one or more of the **SEMI** controls to something other than a simple octave. This can used to create partials on organ voices in conjunction with careful adjustment of the level controls.

Phasey

When using two or more of the same voices setting the **FINE** tune controls to very similar but not identical settings can result in some interesting phasing effects.

Wobbly

Using relatively deep **LFOs** of slightly different speeds across all four voices, especially in conjunction with a suitably timed delay can be quite effective.

The Effects Section

To the right of the layering engine is the effects section.



The effects section comprises of four basic effects. Each of the four effects are chained in series and can be disabled by turning their respective **AMOUNT** control fully anti-clockwise.

Reverb

The reverb utilises the latest convolution technology to digitally simulate the reverberation of a physical or simulated acoustic space.

Click on the blue LCD display to select the type of room simulation required and then use the **SIZE** control to set the size of the space and the **AMOUNT** control to set the amount of the effect to be mixed with the dry signal.

Echo

The echo section is a delay with feedback and damping. The **TIME** control sets the delay whereby moving the control clockwise increases the delay time. The **FEEDBACK** control sets the amount of the signal from the delay that is fed back to the input. The further this control is increased the more the input signal is recycled thus creating dramatic repeating and sustain effects. The **DAMPING** control determines how the delay decays with time. The **AMOUNT** control determines how much of the effect is mixed in with the dry signal.

Phaser

The phaser is a digital simulation of a classic analog phaser. The **RATE** control determines how rapidly the phaser is modulated and the **AMOUNT** control sets the amount of the effect to be mixed with the dry signal.

Chorus

The phaser is a digital simulation of a classic stereo analog chorus (minus the noise!). The **RATE** control determines how rapidly the phaser is modulated and the **AMOUNT** control sets the amount of the effect to be mixed with the dry signal.

Saving Your Own Sounds

All of your creations can be saved as .nki instruments simply by using the **save as** function by clicking on the **files** icon in the main Kontakt control pane.

Remember that if you edit an existing sound you must save it under a new name otherwise you will overwrite it!



1976 Revisited.. Polymoog No.3211...Returned to Life!

Credits

Dani Wilson (Hideaway Studio)

Polymoog Restoration, Sound Design, Sample Set & Example Instruments

Stephen Howell (Hollow Sun)

Layering Engine Concept, GUI Design & Graphics

Mario Krušelj

Layering Engine Script

A very big thank you to Will Gregory for granting permission to sample Polymoog #3211 following restoration at Hideaway Studio.

For more information and many more releases for Kontakt by Hideaway Studio please visit:
www.hideawaystudio.net

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